REMARKS

Reconsideration of the subject application in view of the preceding amendments and the following remarks is respectfully requested. Claims 1-13 are pending in this application. Claim 1 has been amended herein and Claims 14 and 15 have been added. New Claim 14 is a combination of Claim 1 and Claim 8. New Claim 15 is a combination of Claim 8 and Claim 10. No new matter has been added by these amendments.

Specification Objection

The disclosure was objected to for the omission of several section headings. The specification has been amended herein to include the required section headings.

Drawings

The drawings were objected to because the Office Action states all of the figures shown should be described in the Brief Description of the drawings. The specification has been amended to describe Figures 1(a) and 1(b) and Figures 2 (a) and 2(b). However, the drawings are already labeled as such. The Applicants respectfully request reconsideration of the objection to the drawings.

Claim Objections

Claim 1 was objected to for insufficient antecedent basis for "the string" in line 3. Claim 1 was amended herein to correct the antecedent basis objection made by the Examiner.

Claim Rejections 35 U.S.C. §103(a)

Claims 1-5, 9-10, and 12-13 were rejected under 35 U.S.C. §103(a) over Wells (U.S. Patent No. 2,033,563) in view of Stanley et al. (U.S. Patent No. 2,698,586). For at least the following reasons, the rejection is respectfully traversed.

Wells describes a method and means for controlling well flow in which a tube 25 is secured within the connected body 31 with its interior communicating with the interior of the tubing string 24. The upper end of the passage 25c is disposed opposite a channel 31e formed within the connector body. The channel has ports 31f that communicate with the zone C established by the packer. A sealing connection is provided between the tube and connector body on either side of the channel 31e so two independent passages communicating with the interior of the tubing string and zone C respectively extend through the packer. (Wells, col. 4, lines 52-70.) The method of operation is after the packer is set zone C of the casing is filled with liquid, filling the passage 25c, 34d and operating end of the regulator chamber 34b. The ports 34c are normally closed by action of the spring 37. Hydraulic pressure introduced through the zone C, passage 25c to the regulator chamber tends to open the ports against the action of the spring 37. (Wells, col. 5, lines 34-43.) As admitted in the Office Action, Wells does not disclose the ports having a combined cross section area greater than the first cross sectional area.

Stanley et al. describes a well pumping cleaning tool having a pump casing with an inlet opening, the combination having a tube depending from the inlet opening of the pump casing provided with a plurality of elongated slots in a spaced relationship in the wall. A plunger shaft is slidably supported for reciprocating movement axially of the tube having an end extending outwardly and through the end of the tube with a plurality of pins carried by the shaft, one of which is positioned with in each of the slots and free to move the length thereof during the

reciprocating movement of the plunger shaft. A compression spring urges the plunger shaft out of the tube whereby pressure applied to the plunger shaft will cause the plunger to move against the bias of the spring and the pins to travel the length of the slots to remove the deposits of the solidified and encrusted foreign matter and release of the pressure will cause the pins to move with the plunger in the opposite direction under the action of the spring. (Stanley, claim 1.) Stanley is cited for describing that the combined area of the elongated slots is considerably greater than the area of the inlet opening in the working barrel in order that pressure drop will be reduced to a minimum during the flow of oil through the slotted inlet openings to the pumping mechanism in the working barrel. (Stanley col. 4, lines 21-27.)

In contrast to Wells, Claim 1 recites a high lift injection valve as described in paragraph 2 of the specification. A high lift injection valve operates by injecting water down the tubing string to the poppet, the water pressure working against the loading of the spring and forcing the poppet or seal away from the seat. Water is then directed through ports in the poppet and through the remaining valve formation, exiting at the valve base. (Specification paragraph 2, as filed.)

Wells, however, describes a hydraulically controlled production regulator that controls the amount of oil permitted to enter the work string. By varying the pressure of the liquid the piston is caused to raise or lower to uncover the desired number of ports and determine the amount of fluid from the well to be admitted into the string. (Wells, col. 2, lines 40- 52, and col. 4, lines 60- 72.) Wells does not teach, suggest, or disclose the valve of amended Claim 1. In particular, Wells does not teach or suggest the first inlet communicating with a work string proving a flow path of first cross-sectional area. Instead, the upper end of the tube 25 is actually an outlet and the ports 34c function as the inlet in Wells. Wells does not teach or suggest one or more ports located on the body, the ports providing a flow path of a combined cross-sectional

area greater than the first cross-sectional area. Further, Wells does not teach or suggest a sealing assembly comprising a seal cap moveable in relation to the body to open and close the ports, wherein fluid flow through the inlet moves the seal cap to open the valve and create an unimpeded flow path between the inlet and the ports with negligible pressure drop. Instead, in Wells, the hydraulic fluid entering the regulator at 34d moves the piston 36 by pressure in the chamber 34b. Accordingly, there is no pressure drop across the regulator as the inlets 34c have a smaller cross-sectional area than the outlet 25.

Stanley does not cure the defects of Wells. Stanley does not disclose that the area of the ports is greater than half of the area of the tubular body as asserted in the Office Action. Instead Stanley describes the combined area of the openings in the elongated slots is considerably greater than the area of the inlet opening in the working barrel in order that the pressure drop will be reduced to a minimum during the flow of oil through the slotted inlet openings. (Stanley, col. 4, lines 21-27.)

Since Wells and Stanley, alone or in combination, do not teach, suggest, or disclose each and every element recited in Claim 1, it respectfully submitted that Wells and Stanley, alone or in combination, do not render Claim 1 obvious under 35 U.S.C.§103(a). Claims 2-7 depend from Claim 1 and thus include all the elements recited in Claim 1. Therefore, it is respectfully submitted that for at least the foregoing reasons, Wells and Stanley, alone or in combination, do not render Claims 2-7 obvious.

Additionally, Wells does not disclose the method of Claim 10. In particular, Wells does not disclose or suggest the use of the fluid to open the valve and thereby inject fluid through an unimpeded path through the valve into the well bore while maintaining fluid pressure at the first pressure. Instead, in Wells the hydraulic fluid entering the regulator at 34d moves the piston 36

by pressure in the chamber 34b thereby allowing oil to enter the ports 34c. Further, Wells does not disclose maintaining fluid pressure at the first pressure.

The invention of Wells would have to be modified in at least the regulator to remove the hydraulic control line 34d and used in the reverse of the described purpose. Further, there would be an issue of a pressure drop created by using the invention in reverse. The solution taught in Wells would be to make multiple small entry ports combining to the large outlet port. This is not the solution taught by the claimed invention. The slots in Stanley are not to reduce the pressure drop through the cleaning tool described but to provide space for a pin to slide within the slot to remove any build up of debris. Again, as above, Stanley does not cure the defects of Wells.

Since Wells and Stanley, alone or in combination, do not teach, suggest, or disclose each and every element recited in Claim 10, it respectfully submitted that Wells and Stanley, alone or in combination, do not render Claim 10 obvious under 35 U.S.C.§103(a). Claims 11-13 depend from Claim 10 and thus include all the elements recited in Claim 10. Therefore, it is respectfully submitted that for at least the foregoing reasons, Wells and Stanley, alone or in combination, do not render Claims 11-13 obvious.

Claims 6-7 were rejected under 35 U.S.C.§103(a) over Wells in view of Stanley, as applied to claim 1 and further in view of O'Donnell (U.S. Patent No. 2,161,309). The rejection is respectfully traversed for at least the following reasons.

O'Donnell describes an arrangement for cementing having a casing of an oil well and a multiple stage cementing unit therein of a male plug and a female plug. The female plug is mounted in the casing beneath the multiple stage cementing unit and held in position by shearable means. The male plug may be pumped down the well behind a slug of cement and contact the female plug to cause the shearing of said shearable means whereupon the female

plug may pass downwardly within the casing to scrape the walls of the same. (O'Donnell, claim 1.) O'Donnell describes a shear ring that rests on the upper end of the female plug and holds the plug in place. (O'Donnell, col. 2, lines 34-39.)

As noted above, Wells does not disclose a valve wherein fluid flow through the inlet moves the seal cap to open the valve and create an unimpeded flow path between the inlet and the ports with negligible pressure drop. Neither Wells nor Stanley disclose the valve of Claim 1 including a pressure release means to open the valve at a predetermined fluid pressure or that pressure release means being a shear ring as in Claims 6 and 7.

One of ordinary skill in the art would not combine Wells with O'Donnell. The regulator of Wells cannot be opened too early. The spring in Wells ensures the valve remains closed until hydraulic pressure, which is controlled from the surface, is used to open it. Therefore, the operator of the system in Wells has direct control over the opening of the regulator and there is no requirement for a pressure release means as taught in O'Donnell.

Since Wells, Stanley, and O'Donnell, alone or in combination, do not teach, suggest, or disclose each and every element recited in Claim 6 or 7, it respectfully submitted that Wells, Stanley, and O'Donnell, alone or in combination, do not render Claims 6 or 7 obvious under 35 U.S.C.§103(a).

Applicants note that new claim 14 includes all of the limitations of Claim 8, which has been deemed allowable by the Examiner. Moreover, new Claim 15 includes the limitations of original method Claim 10 in combination with the valve of Claim 8. Therefore, it is respectfully submitted Claims 14 and 15 should be deemed allowable.

It is respectfully submitted that none of the prior art of record, alone or in combination, teaches, discloses or suggests the invention as presently claimed. Based upon the foregoing favorable consideration of Claims 1 – 15 is respectfully requested. If it is believed that an

interview would advance prosecution, the Examiner is invited to call Applicants' representative at the number below.

It is respectfully submitted that this response is timely filed, together with the included request for a one-month extension of time and accompanying fee. The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 04-1105, under Order No. 65583(71678).

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Respectfully submitted,

By _____

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Amendment to Non-Final Office Action(15 pages)
One-Month Extension of Time (1 month)